Secondary Cities Geospatial Training Workshop: Cusco, Peru Pilot Project -- Workshop Description and Objectives, June 29 – July 3, 2015

Tentative Schedule – subject to change

This workshop launches HIU's Secondary Cities project to identify and map critical data in rapidly growing urban regions of the world. Cusco, Peru has been targeted for the initial pilot to create a demonstration project focusing on data generation for emergency preparedness, security, and resilience. The goal of this pilot project is to teach spatial thinking through an exploration of geospatial science. Students will learn basic skills for data generation, management, and sharing as well as the fundamentals of generating geospatial data and making maps.

The workshop will provide instruction in geographic information science (GIS) for data generation using multiple tools that include: field data collection (using global positioning systems (GPS)), working with existing data (spreadsheets and tables to develop charts, graphs and maps; searching for existing data); and creating new data (digitizing using satellite imagery). Students will use multiple tools during the workshop: ESRI's ArcGIS, volunteered geographic information (OpenStreetMap), global positioning systems (GPS), remotely sensed data (satellite imagery), and open source platforms for data sharing (GeoNode). The workshop will provide hands-on, real world labs to develop a project that generates geospatial data for sharing, analyzing and visualization.

Note: There will be a morning and afternoon break each day.

DAY 1 -- June 29:

9 am – Noon:

- Introductions
- Overview of workshop and project (ML)
- Pre-Survey (ST)
- Icebreaker activity (ML)
- Spatial thinking Lecture (KM)

Morning Break

- What and why GIS? Overview of tools (ML)
- Team selection/Overview of team project activity (ML)

12:00pm – 1:00pm *Lunch break*

1:00pm – 4:00pm **Exercise 1:** (KM)

- Lecture: Comparing cities: Examining existing data and Navigating ArcMap
- Lab: Starting with a world map/image, we will explore and compare megacities and secondary cities around the world. First we will examine where these cities are located across the globe and extract some comparative statistics. We will zoom to Peru and conduct a similar examination, creating graphs and charts to compare Lima and Cusco. Then we will focus on Cusco and examine the demographic information for the city and create a demographic description.

4:00 pm – 5:00pm: Discussion (ML)

5:00pm – 6:00pm: *Reception*

DAY 2 -- June 30:

9:00 – noon

Evaluation activity (KM, EN, ST)

Daily overview and discussion. Comments and sharing on previous day; revisit key points. (ML)

Exercise 2: Thinking about place – creating data, making maps and using cartographic elements (ML)

- Lecture: How do you define place?
- Activity: Create a map of your neighborhood and the 5 most important places that you spend time. Discuss with your teammates the map that you have drawn. What do you need to include on the map to be sure that other people can use it to find your neighborhood?
- Lab: Locate your neighborhood on the satellite image. Identify the points on your hand drawn map. You will create a data layer of the points on your map and add description or attribute information about those locations. You can then conduct some preliminary analysis on your points such as measuring the distance between points and calculating the distance betweeen points.
- Report back to group; share results. Discussion. (ML)

12:00pm – 1:00pm: *Lunch break*

1:00pm – 4:00pm: **Exercise 3:** Collecting field data (KM)

- Lecture: GPS and collecting data in the field.
- Using a GPS is one way to collect data in the field. You will be provided 5 points (latitude and longitude) to navigate to and identify what is located at that particular location. You will devise a spreadsheet of the required attribute data to include when you visit the location (we will discuss this in class). Upon return to the classroom, you will download the GPS data, add your attribute data to a spreadsheet and create a map of the path you traversed. You will also create metadata for the new data that you have created.

4:00pm – 5:00pm: Sharing results. (ML)

DAY 3 -- July 1:

9:00am – noon

Evaluation activity (Cartography and GPS), (KM, EK, ST)

Daily overview and discussion. Comments and sharing on previous day; revisit key points. (ML)

Revisit previous labs – troubleshooting, completing activities. (ML)

Exercise 4: (ML)

- Lecture: Creating new data using satellite imagery.
- Lab: Using a high resolution satellite image, you will digitize a major thematic data layer around the University. We will discuss these themes based on the Human Geography data (see Human Geography handout). Once all groups have digitized their data, we will examine them all as overlays and discuss what data we have developed, gaps in the data, and next steps for data development.
- Discussion and project development (ML)

12:00pm – 1:00pm: *Lunch*

1:00pm – 4:00pm

- Finish Exercise 4
- Discussion: **Project development and planning:** (ML)
  - Each team will devise a plan for developing your data layer. Identify who will be doing what and how to get the tasks done.

4:00pm – 5:00pm: Sharing project ideas (ML)

DAY 4 -- July 2:

9:00am – noon

Evaluation activity (Remote Sensing) (KM, EN, ST)

Daily overview and discussion. Comments and sharing on previous day; revisit key points. (ML)

Project implementation: (ML)

- Teams will use the skills they have learned to field truth their data digitized in Exercise 4. Each team will devise a plan to verify their data in the field, correct their data in the lab, update their data layer and create metadata. Additionally, teams will coordinate with one other team to overlay and analyze the data using a geospatial tool, such as distance, adjacency, proximity, etc…A final map or series of maps will be developed for sharing and discussion.
- Check in as needed

12:00pm – 1:00pm: *Lunch break*

1:00pm – 4:00pm

- Work on project

Exercise 5: Data sharing (EN)

- Lecture: Overview of data sharing.
- Demonstration/Activity: Using GeoNode, we will share data. Discuss QA/QC procedures. Upload data process.

4:00pm – 5:00pm: Discussion and issues….Troubleshooting your project (ALL)

5:00pm – 6:00pm: Post-workshop survey; Evaluation Activity (Remote Sensing) (ST, KM, EN)

DAY 5 -- July 3:

9:00am – noon:

Data clean up: (ALL)

- Check to be sure that your data layer is complete. Be sure that you have completed the metadata.

Project completion (ALL)

- Finish uploading data. Finish final maps.

Discussion: Next Steps: Mentoring partners; Data generation and follow up (ML)

12:00pm – 1:00pm: *Lunch*

- Project presentations
- Wrap up/Certificate presentation (or in the evening)

Evening dinner for partners